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# PATENT SPECIFICATION

Application Date: Oct. 20, 1934. No. 30111/34. 442,098

Complete Specification Accepted: Feb. 3, 1936.



## COMPLETE SPECIFICATION

### Improvements in or relating to the manufacture of Pipes from Asbestos-cement and the like

I, ADOLFO MAZZA, an Italian Subject, of 8, Piazza Corridoni, Genoa, Italy, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:

The present invention has for its object to produce pipes having a bell or socket formed thereon from material composed of fibrous substances held together by binders, e.g. asbestos fibre and hydraulic cement respectively. According to the invention such pipes are formed by a method including the steps of forming the pipe in a machine of the revolving type, and while the pipe is still in the moist condition forming a bell or socket thereon by applying continuously to a portion of the pipe concentric thin layers of fibrous substance and binding substance, while simultaneously subjecting said layers to pressure, whereby a monolithic whole is formed. Both the pipes and bell or socket are manufactured by means of a machine of the revolving type according to the processes described in the prior Patent Specifications Nos. 159,832, 225,543, 240,142 and 373,240.

In order to achieve this object, a machine has been designed which has a reduced size but is very similar to the machines employed for the manufacture of cement-asbestos pipes described in the above mentioned prior Patent Specifications Nos. 225,543, 240,142 and 373,240 and having a useful width of only 30 to 40 cm. instead of the useful width of 3 to 4 m. of the said machines for the manufacture of cement-asbestos pipes.

The machine forming the subject matter of the present invention intended for the manufacture of the bell or socket may be fitted with a device adapted to impart (either mechanically or by means of any fluid) a variable pressure to the cement-asbestos bell or socket during its manufacture in superposed, concentric thin layers, the said pressure becoming gradually lower as the thickness of the bell or socket increases; alternatively the machine may be fitted with a device cap-

able of imparting a constant pressure, this being dependent upon the diameter or the thickness of the bell or socket. 55

In the accompanying drawings:

Figure 1 is a side view diagrammatically showing the forward portion of the machine, viz. only the portion where the bell or socket will be made, as described below; 60

Figure 2 is a side view showing the equipment provided for exerting a variable pressure on the bell or socket by means of a mechanical device; 65

Figure 3 is a side view showing the equipment for exerting a variable pressure on the bell or socket by means of a hydraulic device;

Figure 4 is a side view showing the constant pressure equipment comprising a number of additional weights which may be increased as desired; 70

Figure 5 is a side view showing the constant pressure equipment comprising adjustable springs. 75

In order to fit, with the machine in question, the bell or socket of fibrous material in moist condition, or pipes likewise of fibrous material (for instance a paste of asbestos fibres and hydraulic cement) in moist condition one proceeds as follows:

After a pipe A of the desired thickness has been obtained on one of the usual machines described in the cited prior Patent Specifications Nos. 225,543, 240,142, and 373,240 the pressure equipment of said machines is raised and the pipe, along with its metal core (forming cylinder or mandril) is taken out and placed in the machine according to the invention in the position indicated in Figure 1. By means of mechanical device BD the pressure equipment is lowered, the projecting portion of the metal core carrying the pipe being supported on the roller C which is caused to revolve at a convenient speed during the building of the bell or cup-shaped socket. 100

The machine, being once set into motion, goes on applying further thin concentric layers of the fibrous material to the pipe portion, still in moist condi-

[Price 1/-]

tion, subjected to the action of the machine and only for the short length allowed by the reduced width of the feed-belt of the machine.

- 5 The convenient pressure (whether decreasing as the diameter and thickness of the bell or socket to be applied increases or constant) exerted in the machine by the above mentioned pressure devices will 10 cause the fresh layers superposed upon the layers constituting the pipe to become thoroughly joined to the pipe layers as well as to one another so that when the desired thickness of the bell or socket is 15 reached and the pipe is removed from the bell or socket forming machine in order to bring it to the calendering machine and remove the metal core, the pipe and its superposed bell or socket will have 20 formed a single and monolithic whole.

In Figure 2 is illustrated at M the mechanical system already known, for applying the variable pressure.

In Figure 3 is illustrated at N the hydraulic system, already known, for applying the variable pressure.

In Figure 4 the constant pressure is exerted by the weight P.

In Figure 5 the constant pressure is 30 exerted by the spring R.

If it is intended that the pipe shall preserve its original length, the bell or socket is formed at one end of the fresh pipe by causing the bell or socket forming machine to work with only about one half 35 of its usual width.

When pipes of length less than the total length of the original pipe are required, the original fresh pipe may be 40 arranged on the bell or socket forming machine in such a manner that the resulting bell or socket, once completed and hardened, may be cut at half its length, each half of the bell or socket thus constituting the bell or socket of the respective parts of the pipe.

Of course, after the hardening of the bell or socket of the monolithic pipes has been completed in the usual manner, the finishing (turning) of the bell or socket must be proceeded with in order to form the socket with its usual internal and external shaping.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A method for the production of pipes of fibrous substances held together by binding substances (such as asbestos fibre and hydraulic cement), having a bell or socket formed thereon, which comprises the steps of forming the pipe in a machine of the revolving type, and while still in the moist condition forming a bell or socket thereon by applying continuously to a portion thereof concentric thin layers of fibrous substance and binding substance, while simultaneously subjecting said layers to pressure, whereby a monolithic whole is formed.

2. A method according to claim 1 wherein the pressure exerted on the layers decreases as the thickness of the bell or socket increases.

3. A method according to claim 1 wherein the pressure exerted on the bell or socket is uniform and constant.

4. The process for the manufacture of 80 pipes from asbestos-cement and the like substantially as described.

5. Apparatus for the manufacture of pipes, having a bell or socket forming a monolithic whole substantially as illustrated in the accompanying drawings.

Dated this 20th day of October, 1934.  
ADOLFO MAZZA.

per: Boult, Wade & Tennant,  
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Chartered Patent Agents.

[This Drawing is a reproduction of the Original on a reduced scale.]

FIG. 1.

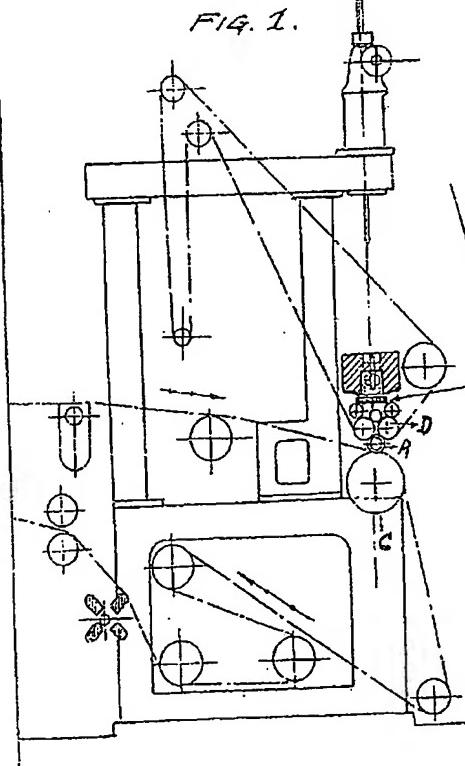


FIG. 3.

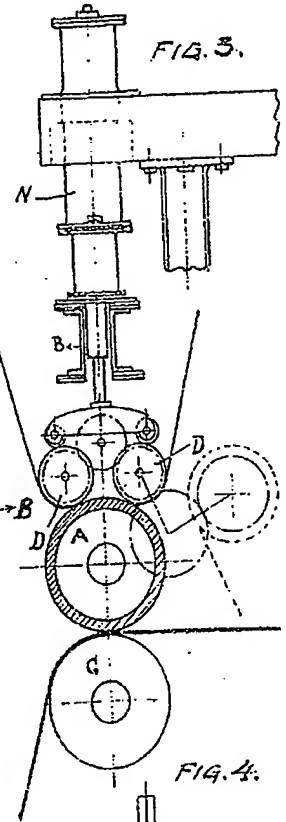


FIG. 4.

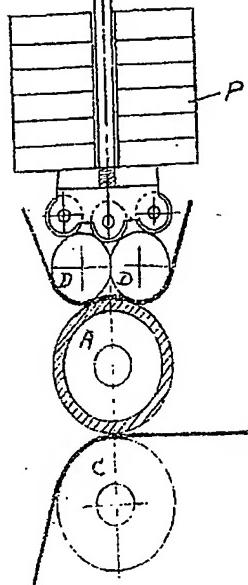
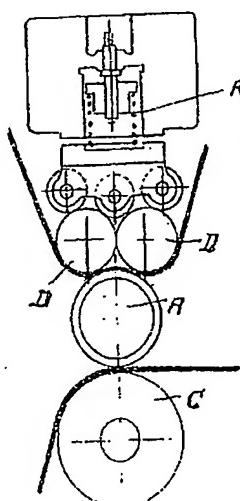
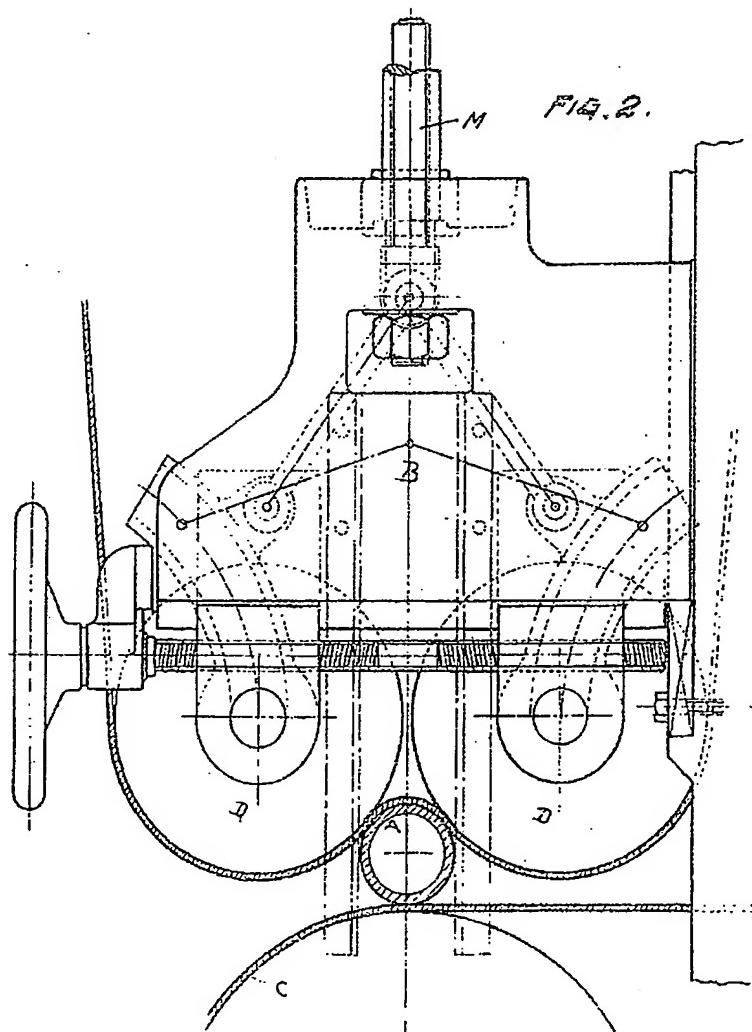
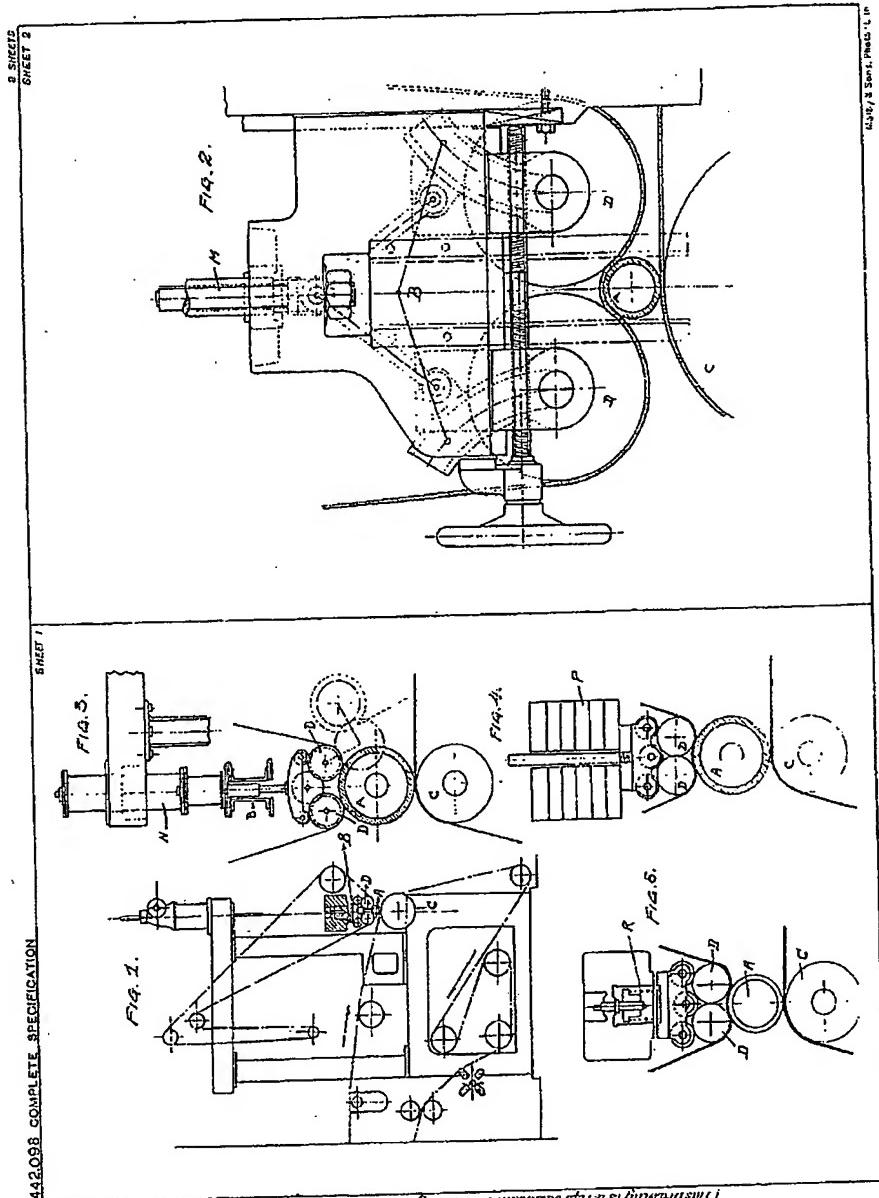


FIG. 5.







*[This Drawing is a reproduction of the Original on a reduced scale.]*